

What is claimed is:

1. An apparatus for routing messages in wireless networks, comprising:
  - a first plurality of filters, each of said plurality of filters adapted to provide
  - 5 a plurality of frequency-based message signals converted from an optically-based signal;
  - a plurality of mixers connected to the first plurality of filters, the mixers adapted to mix the plurality of frequency-based message signals with a plurality of sub-carriers to generate a plurality of frequency-based sub-carrier modulated
  - 10 message signals;
  - a frequency generator connected to the plurality of mixers for providing the plurality of sub-carriers to the mixers;
  - a combiner connected to the mixers for combining the plurality of frequency-based sub-carrier modulated message signals;
  - 15 a second plurality of filters connected to the combiner and adapted to receive and group the plurality of frequency-based sub-carrier modulated message signals;
  - a plurality of optical transmitters, each of said plurality of transmitters connected to one of the second plurality of filters for optically converting and
  - 20 transmitting the frequency-based sub-carrier modulated message signals.
2. The apparatus of claim 1 wherein the each of the first plurality of filters is centered at a pre-defined subcarrier frequency.
- 25 3. The apparatus of claim 2 wherein the plurality of filters are RF filters.
4. The apparatus of claim 1 wherein the frequency generator generates and applies a particular sub-carrier frequency to one of the mixers according to control information associated with the frequency-based message signal.
- 30 5. The apparatus of claim 4 wherein the control information is associated with the frequency-based message signal via a generalized MPLS (GMPLS) label.

6. The apparatus of claim 4 wherein the control information is contained in a header portion of the frequency-based message signal.
7. The apparatus of claim 1 wherein the second plurality of filters are bandpass  
5 filters.
8. The apparatus of claim 1 further comprising a receiver device for receiving the optically converted and transmitted sub-carrier modulated message signals and filtering the sub-carrier frequencies from the frequency-based message  
10 signals.
9. Method for routing messages in wireless networks comprising the steps of:  
optically receiving one or more composite optical signals;  
converting said one or more composite optical signals into a plurality of  
15 frequency-based message signals;  
mixing one or more of the plurality of frequency-based message signals with a corresponding sub-carrier to generate one or more sub-carrier modulated frequency-based signals;  
combining and grouping said one or more sub-carrier modulated  
20 frequency-based signals; and  
optically converting and transmitting each group of said one or more sub-carrier modulated frequency-based signals.
10. The method of claim 9 wherein the step of converting includes filtering the  
25 received signals at predetermined sub-carrier frequencies to recover the frequency-based message signals contained therein.
11. The method of claim 9 wherein the step of mixing includes interpreting control information associated with the frequency-based message signal to  
30 determine the appropriate sub-carrier for mixing.

12. The method of claim 11 wherein the control information is contained within a generalized MPLS label of the frequency-based message signal.

13. The method of claim 11 wherein the control information is contained within a  
5 header of the frequency-based message signal and assigns a sub-carrier frequency thereto.

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